

# NR - G A C S y s t e m



## Granular Activated Carbon Filtration

*Napier - Reid Granular Activated Carbon Filtration system is widely used in water treatment plants to remove free chlorine, dissolved organics, odor, taste, colour, and synthetic organic contaminants.*



## **N-R GAC Process Description**

Napier Reid's **Granular Activated Carbon (GAC)** system removes the contaminants from the water through adsorption, in which negatively charged contaminant ions are attracted by the positively charged activated carbon. The organic compounds are removed by absorption and residual disinfectants such as chlorine and chloramines are removed by catalytic reduction.

GAC is normally placed in a pressure vessel or gravity filtration tank through which raw water passes. The carbon filters mechanically strain out dirt, sediment, algae, bacteria, microscopic worms, cryptosporidium and asbestos. When the surface area of the carbon granules is clogged with the contaminants due to adsorption, pressure differential increases and the filter bed is backwashed.

### **SALIENT FEATURES OF N-R GAC SYSTEM:**

- N-R GAC system can be supplied as complete package, assembled, tested, inspected and with complete piping.
- Carbon steel tower or pressure vessel, interior epoxy lined suitable for potable service and prime exterior finished. Carbon steel pressure vessels designed for 150 psig operating pressure.
- Fiberglass reinforced polyester (FRP) pressure vessels available for 150 psig working pressure.
- Highly efficient feed water distribution system.
- Efficient under-drain collection / distribution system for minimal pressure drop and proper backwashing.
- Degree of automation can be provided as per client's requirement, from completely automatic to completely manual.
- PLC / SCADA control package for auto control of different processes.



**NR-GAC Tower**, installed in 1999 at Echo Bay, Ontario, Canada, to remove organic contaminants

## Advantages of NR-GAC System

- N-R GAC systems are best suited for removal of dissolved organic compounds responsible for taste and odor, suspended solids, and chlorine removal from industrial water.
- High quality GAC media has a high surface area, high iodine value, low ash content and low moisture in each system.
- Very stable and reliable operation.
- NR-GAC are custom designed and fabricated in order to suit the process and site requirements.
- Smaller footprint compared to other systems.
- N-R GAC systems increase the life and efficiency of ion exchange and RO system when used for previous pretreatment.
- PLC / SCADA control package available for automatic control of the process.
- Designed and manufactured by a company which has over 50 years of experience in the water and wastewater treatment industry.
- Process designers of Napier Reid have over 300 years of cumulative experience in process designing.
- Optimum design and size keeping in view all operating conditions, resulting in lower capital cost, years of smooth operation and considerable savings for the client.



▲ **NR-GAC Filter** - North Caribou,  
 First Nation, Ontario, Canada  
 Design Flow 1080m<sup>3</sup> per day



▲ **NR-GAC Towers**

## NR-GAC Applications

Granular Activated Carbon filtration system can be a single treatment step or can be combined with other processes to remove free chlorine and dissolved organics from:

- **Municipal Water**
- **Municipal Wastewater**
- **Surface water**
- **Ground water**
- **Industrial wastewater**



➤ **NR-GAC Tower - Balsam Lake Provincial Park, Ontario, Canada**  
**Design Flow 360m<sup>3</sup> per day**

▲ **NR-GAC Tower – South Chatam Ontario, Canada**  
**Design Flow of each tower: 7600m<sup>3</sup> per day**

## About Napier - Reid

**Over 60 years of excellence in water & wastewater treatment**

Napier-Reid is located in the greater Toronto area in the Province of Ontario, Canada. We supply engineering services and process equipment for water and wastewater treatment.

We have the technology, resources and experience to design, manufacture and implement innovative water and wastewater treatment solutions worldwide. We have completed over 3000 projects since our inception in 1950. This stands as a testament of our ongoing commitment of providing the highest quality service, products and after sales support in the industry. Our capabilities include engineering, manufacturing, installation and field support. We have in-house personnel for complete mechanical, electrical and instrumentation process and control system design. As a manufacturer, our designs focus on cost-effective solutions, simplicity of installation and ease of maintenance.

Napier-Reid has developed an excellent team with many years of experience. We have a well-deserved reputation for innovation, service and integrity. A significant portion of Napier-Reid's business is now exported to countries such as the Caribbean, Central America, South America, Middle East, Eastern Europe, Africa, and Asia. Some of these projects are financed by Canadian government or International financing institutes. As a Canadian manufacturer, we are eligible for Canadian governmental funding and EDC export credit. We have the capability to handle a large range of projects, from engineering, equipment supply, installation, start-up, to turnkey projects. Let Napier-Reid be your single solution for water and wastewater purification.



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